UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,616	09/12/2003	Takehito Washizawa	116779	6119

25944 7590 04/03/2006

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER	
CHIEN, LUCY P	
ART UNIT	**PAPER NUMBER**
2871	

DATE MAILED: 04/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/660,616	WASHIZAWA ET AL.	
	Examiner	Art Unit	
	Lucy P. Chien	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-14 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 12 September 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11/9/05,9/12/03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: NPL document

DETAILED ACTION

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1,3,4,13,14 are rejected under 35 U.S.C. 102(b) as being anticipated by Okumura (JP 2001-188235).

Regarding Claim 1,3,

Okumura discloses (Fig. 23) an apparatus to arrange spacers at fixed points on a display substrate utilizing a spacer dispersion solution that includes the spacers dispersed in a solvent, the apparatus comprising:

A nozzle head (260) intermittently discharging a spacer dispersion solution from nozzle holes from a plurality of nozzle holes (370), while scanning along a predetermined scanning direction, the plurality of nozzle holes being arranged at a non-zero angle with respect to a direction perpendicular to the scanning direction. During the intermit discharging of the spacer dispersion solution, *Regarding Claim 4,* the discharge interval of the spacer dispersion solution is larger than the diameter of the spacer dispersion solution discharged onto the substrate.

Regarding Claim 13,14,

Okumura does not show the plurality of nozzle holes in the nozzle head having a pitch that is greater than a pitch of the pixel regions in a direction perpendicular to the scanning direction but the spacer (10b) which are formed outside of the pixel (shown in Fig. 21a) would indicate the nozzle holes in the nozzle head having a pitch that is

greater than a pitch of the pixel regions in a direction perpendicular to the scanning direction.

Claim 2 is rejected under 35 U.S.C. 102(b) as being anticipated by Hasegawa et al (JP 02-289822).

Hasegawa et al discloses an apparatus to arrange spacers at fixed points on a display substrate utilizing a spacer dispersion solution that includes the spacers dispersed in a solvent, the apparatus comprising:

a nozzle head (2) discharging the spacer (3) dispersion solution from a plurality of nozzle holes, while scanning along a predetermined scanning direction, the nozzle head (2) being rotated such that alignment direction of the plurality of nozzle holes is inclined at a non-zero angle with respect to a direction perpendicular to the scanning direction (Abstract).

Claim 5,7,8,10-12 is rejected under 35 U.S.C. 102(b) as being anticipated by Onishi et al (US 5643471).

Regarding Claim 5.

Onishi et al discloses (Fig. 52A) A liquid crystal device, comprising:

a pair of substrates arranged to face each other with a sealing material (Column 70, rows 49-52) interposed there between; liquid crystal and spacers injected into a space surrounded by the pair of substrates and the sealing material, and the space is sealed, One of the pair of substrates having a plurality of pixel region (526) and non-pixel (521,522) regions formed around the pixel regions. The spacers (527) being

arranged in a straight line at a non-zero angel with respect to an arrangement direction of the pixel regions in plan view; and a portion of the spacers being located at intersections of the non-pixel regions an another portion of the spacers being arranged at locations other than intersections of the non-pixel regions.

Regarding Claim 7,

Onishi et al discloses (Fig. 52A) the spacers being arranged in the non-pixel regions.

Regarding Claim 8,

Onishi et al discloses (Fig. 52A) a light shielding layer being formed in portions corresponding to the non-pixel regions, where the spacers are arranged. (column 30, rows 30-35).

Regarding Claim 10,

Onishi et al discloses a process of controlling the alignment of the liquid crystal being performed on the surfaces of the spacers (Column 10, rows 50-55).

Regarding Claim 11,

Onishi et al discloses a fixing layer fixing the spacers to the substrate being formed on the surfaces of the spacers (Column 6, rows 13-19)

Regarding Claim 12.

Onishi et al discloses An electronic apparatus , comprising: the liquid crystal device according to Claim 5 (Column 1, rows 5-12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onishi et al (US 5643471).

Onishi et al discloses (Column 2, rows 39-44) the spacers being in the form of a mixture of a single element and an aggregate, the arrangement density of the spacers is 15 to 100/mm.sup.3, which is an overlapping range 50-300/mm.sup.2. The average number of spacers per liquid drop is 0.2 to 3 is not shown. The density of spacer (per mm or per drop of liquid crystal) was a well known result effective variable, where it was well known that too little gave insufficient dimensional stability, and it was well known that too much gave optical abnormalities. As it has been held that the optimization of a result effective variable was at least obvious, the selection of this variable would have been within the ordinary skill level.

It would have been obvious to one of ordinary skilled in the art to have the specific density of the spacer motivated by the desire avoid insufficient insufficient dimensional stability and optical abnormalities.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onishi et al (US 5643471) in view of Saiuchi et al (US 5486941).

Regarding Claim 9,

Onishi et al does not disclose the spacers being colored.

Saiuchi et al discloses using colored spacers (Column 8, rows 42-52) In the liquid crystal display element, the liquid crystal is optically changed to form an image by applying a voltage between the transparent electrodes. However, spacers are not optically changed by the application of a voltage. Therefore, uncolored spacers are likely to be observed as luminescent spots in dark portions of a displayed image, resulting in a deterioration in the contrast of the image display.

It would have been obvious to one of ordinary skilled in the art to modify Onishi et al's display to include Saiuchi et al's colored spacers motivated by the desire to avoid luminescent spots in dark portions of the displayed image in order to avoid deterioration in the contrast of the image displayed (Column 8, rows 42-52).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy P. Chien whose telephone number is 571-272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lucy Chien
Examiner
Art Unit 2871
LC

ANDREW SCHECHTER
PRIMARY EXAMINER